IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application of	:	
DRURY, THOMAS J.	:	Examiner Chang
Serial Number: 10/748,302	:	Art Unit 1771
Filing Date: December 31, 2003	:	
For: POLYVINYL ACETAL COMPOSITION SKINLESS ROLLER BRUSH	:	

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPEAL BRIEF

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APPEAL BRIEF

REAL PARTY IN INTEREST

The real party in interest is the assignee/appellant, Tolland Development Company, LLC.

RELATED APPEALS AND INTERFERENCES

There are no other appeals, interferences or judicial proceedings known to appellant or it's legal representatives which may be related to, directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

STATUS OF THE CLAIMS

The Examiner has rejected Claims 1-22 as being anticipated under 35 USC 102(a) or obvious under 35 USC 103(a) in view of the reference of Bahten U.S. Patent Number 6,076,662.

Claims 1-22 are being appealed.

STATUS OF THE AMENDMENTS

A final Office Action was mailed February 23, 2006 and Applicant filed a Response to the same on August 23, 2006.

The Examiner issued an Advisory Action on September 7, 2006 before the Filing of an Appeal Brief, entering the Response of February 23, 2006 after Final for the purposes of appeal, rejecting claims 1-22 in view of the cited art, but withdrew the rejection of the claims 18-21 under 35 USC 112, first paragraph.

Applicant has filed an Amendment with regard to dependent claim 7 on October 16, 2008.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The subject matter of independent claim 1 is a cleaning device comprising a shaped body made of porous polyvinyl acetal material having a uniform pore size throughout the material with over 90% of the pores ranging from about 7 microns to about 40 microns in size (pg. 7, lns. 6-9; Fig.1)..

The subject matter of dependent claim 2 is directed toward a roller having a smooth outer surface (pg. 6, ln. 12; Fig.1).

The subject matter of dependent claim 3 is directed toward a pad (pg. 5, ln. 20; Fig. 2).

The subject matter of dependent claim 4 is directed toward a disk (pg. 6, ln. 1; Fig.3).

The subject matter of dependent claim 5 is directed toward polyvinyl acetal material having an average pore size of about 20 microns (pg. 7, lns 7, 8).

The subject matter of dependent claim 6 is directed toward a material has about 95% of its pores with a size below 40 microns (pg. 7, lns. 6, 7).

The subject matter of dependent claim 7 is directed toward a cleaning device having a body made of pourous polyvinyl acetal material (pg. 7, lns. 6-8) having a bubble point pressure of about .092 PSI (pg. 7, ln. 14).

The subject matter of dependent claim 8 is directed toward a roller having an outside diameter of about 60mm and an inside diameter of about 30mm with a thickness of about 15mm (pg. 6, lns. 14-16).

The subject matter of dependent claim 9 is directed toward a material has a mean flow pore pressure of about 0.33 PSI (pg. 7, ln. 14).

The subject matter of independent claim 10 is directed toward a semiconductor cleaning device comprising a body made of porous polyvinyl acetal material with a cylindrical roller shape and a smooth outer surface (pg. 6, ln. 12), the material having uniform formed pore sizes throughout with at least 90% of the pores ranging from about 7 microns to about 40 microns in size (pg. 7, lns. 8, 9) with a fluid flow through rate which does not distort the roller during the cleaning process when fluid is passed through it to clean the same (pg. 6, lns. 17-20).

The subject matter of dependent claim 11 is directed toward a polyvinyl acetal material with an average pore size of about 20 microns (pg. 7, ln. 13).

The subject matter of dependent claim 12 is directed toward a material with 95% of its pores having a size below 40 microns(pg. 7, lns. 7, 8).

The subject matter of independent claim 13 is directed toward a semiconductor cleaning device comprising a body made of porous polyvinyl acetal material with formed pores and having at least 95% of its pores with a size under 40 microns(pg. 7, lns. 6, 7).

The subject matter of dependent claim 14 is directed toward a roller which is substantially skinless (pg. 6, ln. 13).

The subject matter of dependent claim 15 is directed toward a material having a mean flow pore pressure of about 0.33 PSI (pg. 7, lns. 12-14).

The subject matter of independent claim 16 is directed toward a semiconductor cleaning device comprising a body made of porous polyvinyl acetal material having a uniform pore size throughout the material with at least 95% of the pores being less than 40 microns in size (pg. 7, lns. 6, 7), the material having a mean flow pore size of about 20 microns (pg. 7, lns. 12, 13).

The subject matter of dependent claim 17 is directed toward a material having a mean flow pressure of about 0.33PSI (pg. 7, lns. 12-14).

The subject matter of independent claim 18 is directed toward a semiconductor cleaning device comprising a substantially cylindrical roller body made of polyvinyl acetal with a smooth outer surface (pg. 6, ln. 12) and uniform material porosity having a mean flow pore pressure of about 0.30 PSI (pg. 7, ln. 14) with 90% of its pores ranging from 7 to 40 microns in size and wet flow rate using water as a medium ranging from about 7.0 L/min to 80.0 L/min (pg. 7, lns. 16-18), the pores forming substantially empty cavities.

The subject matter of dependent claim 19 is directed toward a semiconductor cleaning

device having cleaning solvent flow through the roller ranging from 120 - 180 ml/minute (pg. 7, lns.1, 2).

The subject matter of independent claim 20 is directed toward a semiconductor cleaning device comprising a substantially cylindrical roller body made of polyvinyl acetal with a smooth outer surface (pg. 6, lns. 12) and uniform material porosity having a mean flow pore pressure of about 0.30 PSI (pg. 7, ln. 14) with 90% of its pores ranging from 7 to 40 microns in size and a dry flow rate ranging from about 25.0 L/min to 95.0 L/min (pg. 7, lns. 16-18), said pores forming substantially empty cavities.

The subject matter of dependent claim 21 is directed toward a roller body polyvinyl acetal material with less than 0.1 ppm formaldehyde (pg.8, lns. 14-16).

The subject matter of dependent claim 22 is directed toward a roller (pg. 6, ln. 7; Fig. 1).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

(A) Whether the invention as defined in Claims 1-22 where were rejected as being anticipated under 35 USC 102(a) or obvious by 35 USC 103(a) in view of the reference of Bahten 6,076,662 is correct.

ARGUMENT

(A) The Examiner's rejection of Claims 1-22 which were rejected as being anticipated under 35 USC 102(a) or obvious by 35 USC 103(a) in view of the reference of Bahten 6,076,662 is incorrect and should be reversed.

Claims 1-22 are now rejected by the Examiner as being anticipated under 35 USC 102(a)

or obvious under 35 USC 103(a) in view of the reference of Bahten 6,076,662. As noted on the face of the Bahten '662 patent, it is assigned to the Rippey Corporation. Bahten '662 is directed toward the packaging and cleaning of previously manufactured porous polymeric products such as semi-conductor cleaning rollers which include a variety of impurities in the finished product.

The previously filed Declaration of Thomas J. Drury in the Preliminary Amendment (Exhibit 1 with attached Exhibits A, B and C; See Evidence Appendix) is a summary analysis of a product comparison testing of rollers commercially being used conducted by independent third parties. Exhibit A is a test of Applied Materials, a corporation who has leading edge skill and knowledge in the field and ranks as one of the top companies in the world, in the production of silicon wafer processing equipment.

This formal test result on the inventive polyvinyl acetal roller, (3920 - 00307 Type 212) by an entity which would be most critical of the results, as they are manufacturer of silicon wafer processing equipment and the rollers used have a direct bearing on the warranty of the equipment. The recommended product life of the rollers used in the manufacturers machines show conclusively that the present invention has three surprising results over the roller products currently being used in the marketplace; (1) the doubling of the effective use life of the roller; (2) a minus defect rate; and (3) a significant reduction of chemical and water usage, any one of which would be a surprising or unexpected result. **A minus defect rate means that the inventive rollers cure manufacturing defects which occur in other areas of the chip manufacture.** The prior art rollers now being used during the chip cleaning process have positive defect rates meaning that certain percentages of chips received from manufacturing were rendered unsuitable for use because of the damage caused by the roller and associated

chemical and water used in cleaning. Other testing and comment by those skilled in the art are attached in the declaration of Drury as Exhibits B and C. The inventive semi-conductor roller product was compared with the roller product manufactured by Rippey Corporation using their best performing product in the semi-conductor roller industry. The Board should note that the Bahten '662 patent has been assigned to the Rippey Corporation.

The Examiner argues that since Bahten '662 teaches the same subject matter (an ultra clean "scrubbing brush") having the wide range of porosity anticipates the present invention. While not using Rosenblatt as a reference, the Examiner utilizes that teaching for a uniform pore size distribution which is not taught by Bahten '662. Furthermore, the Examiner's argument that Bahten '662 obviously practices the invention is not born out by the comparative test data or the realities of the marketplace, namely, that the Rippey corporation would have a lesser product for its competitive line.

Some patents (Bahten) use starch for the pore former while others (Rosenblatt, Cercone, previously cited by the Examiner in rejecting the claims) use air as the pore former. These different pore formers are not and cannot be combined. The invention combines all of the good physical attributes of a starch (finite sized pore former) based product such as that made under Bahten with the good attributes of a gas or air (strength, durability) formed product Rosenblatt, Cercone, to produce a product superior to any of the cited prior art. The production of roller products is either by starch or by air and the same are not combined in the manufacturing process.

The Examiner has used supposition in rejecting the present application and has made the determination that Rippey would use an inferior product in the highly competitive marketplace.

Thus, Rippey would have chosen to use a product with a positive defect rate, reduced use life and a product which will require the use of chemicals and water over that of the present invention. The Examiner has engaged in hindsight application, a prohibited rejection since *John Deere* to apply the cited prior art reference of Bahten '662 against the present invention.

Bahten '662 uses starch as the pore former. Many of the pore forming grains (starch) can remain trapped in the material after it is cured and after the material washing, only releasing in use, which causes contamination of the process making a much dirtier sponge. This is clear from the multiple washes required to obtain a useable roller. When this roller product is formed, both sponge and starch combine to make a surface skin. This skin requires that the liquid flow pressure be greater to push the cleaning solution through the brush/roller. This results in higher chemistry (water and chemicals) usage and greater stress and breakdown of the skin material resulting in a shorter use life.

The Bahten '662 patent (assigned to Rippey Corporation) is primarily directed toward a packaging for PVA brushes and lists PVA brushes and their attributes generally. Bahten '662 generally states that the pore size (listing a size range for various roller embodiment composition) ranges from about 10 microns to about 200 microns and also notes where the average pore size is less than 10 microns the material may have poor elasticity making the performance of the cleaning roll unsatisfactory. Bahten '662 is does not teach the production of a shaped body, the uniformity and size distribution of the pores and does not teach a uniform pore size within a narrow range as claimed in the present invention. There is no teaching that over 90% of the pores range between 7 and 40 microns or that there is a mean pore size or of the mean flow pore pressure. There is no teaching of the present invention in the Bahten '662

reference.

Exhibit B specifically states that **the invention brushes clean twice as good as Rippey brushes and their equivalent**. The production of Bahten '662 requires adding a starch to form the pores. It is also noted that other competitive brushes have impurities. Of significant interest is the listing on Col 7 lines 35 -44 of Bahten '662 which notes that the rollers of Merocel Scientific Products (Cercone et al. '573) include a wide variety of impurities that can be detrimental to the manufacture of integrated circuits. As noted on Col. 7 lines 33,34, the Bahten '662 process has a first step of providing a plurality of porous polymeric devices which require cleaning. **These are rollers which have already been manufactured.**

Claim 1 of Bahten '662 is as follows:

> **"1. A storable porous polymeric device comprising:**
>
> **a porous polymeric member, the member comprising an outer surface and a plurality of impurities distributed through the member, said plurality of impurities including a sodium concentration of less than about 0.2 parts per million;**
>
> **a preservative applied to said porous polymeric member; and**
>
> **a containment package enclosing and sealing said preservative and said porous polymeric member within said containment package." (Emphasis added).**

Because Bahten '662 uses starch, twelve additional complex cleaning steps are required after receiving the manufactured product to remove particulate contamination and impurities from the porous polymeric devices so that they can be used for cleaning silicone chips. The devices are noted as being "dirty" from the manufacturing process and should be substantially

cleaned before use in the manufacturing operation, e.g. semiconductor fabrication. As noted in Col. 7, lns. 13-15: "The above sequence of steps removes or substantially reduces quantities of ionic contamination and particulate. After cleaning, a preservative of either high pH is added such as ammonium, hydroxide or low pH such as oxalic acid, citric acid and the roller is then packaged. There is no preservative in Applicant's invention and indeed it is noted that the type of preservative depends highly upon the type of porous polymeric material. After the cleaning steps are accomplished, the product cleaned by Bahten still contains a number of impurities which seriously impact on it's product life and the defect ratio of silicone wafters. This twelve step requirement is specifically pointed out to show that the roller products of Bahten '662 are inherently dirty which means that substantial impurities would remain after washing as the impurities are held in the foam during curing resulting in a lower life span and use of greater cleaning chemicals. Test results show that such problems are still in existence.

It is, thus, seen that the Bahten '662 reference clearly does not anticipate under 35 USC 102(a) or obviate under 35 USC 103(a) the present invention, as it uses different pore forming techniques in the PVA with a resultant wide range of pores. The invention because of its unique specific narrow range of pore sizes and fluid flow characteristics has a life span more than double the rollers presently being used in the marketplace, uses ½ the chemicals and water currently being used by rollers in the field which are used in the marketplace and has a negative defect rate. As previously noted the inventive rollers when cleaning the silicone wafers do not cause defects as do other competitive rollers but additionally cure manufacturing defects which occur in the production of the silicone wafers. These are all solutions to a long felt need in the industry and are totally unexpected and are surprising results which save large quantities of products, save a

significant amount of money in a multibillion dollar industry and have significant environmental benefits.

Applicant would note that nowhere does Bahten '662 is teach (1) specific uniform narrow pore size; (2) "mean flow pore pressure"; (3) "cleaning solvent flow rate through the roller" or (4) "dry flow rate " or that the same are accomplished by practicing its teachings. The uniform pore size and porosity of the present application is not disclosed by Bahten '662 and the products have not been shown to be identical or substantially identical in structure or that are produced by identical or substantially identical processes. It is also not obvious to reduce formaldehyde to the levels of the present invention. The phrase substantially free from impurities does not teach removing the residual formaldehyde to less than 0.1ppm. Such rejections are pure hindsight rejections based on supposition and not the prior art.

In cases which are similar to the present circumstances, the courts have ruled that beyond looking at the prior art to determine if it suggests doing what the inventor has done, one must consider if the prior art provides an expectation of succeeding in the endeavor. *In re Dow Chemical Co.,* 837 F.2d 469, 473, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), "Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure." Id. As noted by the court in the case of *In re Clinton,* "Obviousness does not require absolute predictability, but a reasonable expectation of success is necessary." *In re Clinton,* 527 F.2d 1226, 1228, 188 U.S.P.Q. 365, 367 (C.C.P.A.1976).

In U.S. patent law, it is well settled that for there to be anticipation under 35 U.S.C.102. "each and every element" of the claimed invention must be found either expressly or inherently described in a. single prior art reference. *Verdegaal Bros. Inc. v. Union Oil Co. of Cal.,* 814 F.2d

1565, 1571; 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1986) and references cited therein. See also, *Kloster Speedsteel AB* v. *Crucible Inc.,* 793 F.2d 1565, 1571; 230 U.S.P.Q. 81, 84 (Fed. Cir. 1986) ("absence from the reference of any claimed element negates anticipation."); *In re Schreiber,* 128 F.3d 1473, 1477; 44 U.S.P.Q.2d 1429, 1431 (Fed.Cir. 1997). To constitute an anticipatory reference, the prior art reference must contain an enabling disclosure. *Chester v. Miller,* 906 F.2d 1574, 1576 n.2, 15 U.S.P.Q.2d 1333, 1336 n.2 (Fed. Cir. 1990), see also *Titanium Metals Corp.* v *Banner,* 778 F.2d 775,181, 227 U.S.P.Q. 773, 778 (Fed. Cir.1985). A reference contains an enabling disclosure when a person of ordinary skill in the art could have combined the description of the invention in the reference with his knowledge of the art to have placed himself, and thus the public, in possession of the invention. *In re Donohue,* 766 F.2d 531, 533, 226 U.S.P.Q. 619, 621 (Fed. Cir. 1985); *In re Sheppard,* 339 F.2d 238, 242, 144 U.S.P.Q. 42, 45 (C.C.P.A. 1964).

As noted by the Court in the case of *In re Gordon,* the mere fact that a prior art reference could be modified to achieve the claimed invention does not make the modification obvious unless the prior art suggested the desirability of the modification. *In re Gordon,* 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir.1984); see also *In re Laskowski,* 871 F.2d 115, 117, 10 U.S.P.Q.2d 1397, 1398 (Fed. Cir. 1989), and *Ex parte Levengood,* 28 U.S.P.Q.2d 1300, 1302 (Bd. Pat. App. & Int. 1993). Applicants respectfully submit that is there is not any suggestion showing the desirability to arrive at the claimed structure of the present invention.

The court in *Minnesota Mining & Manufacturing Co. v. Johnson &Johnson Orthopaedics, Inc.,* 24 USPQ2d 1321 (Fed. Cir 1992) held that: "Although [a patent's] specific claims are subsumed in [a prior art reference's] generalized disclosure..., this is not literal

identity." The *Minnesota* court held that the reference's ranges were so broad as to be meaningless, and provided no guidance on how to construct a product with the patented invention's benefits. The court in *In re Baird,* 29 USPQ2d 1550 (Fed. Cir. 1994) held that "The fact that a claimed compound may be encompassed by a disclosed generic formula does not by itself render that compound obvious." The *Baird* court further held that a disclosure to numerous compounds does not render obvious a claim to three compounds, particularly when that disclosure indicates a preference leading away from the claimed compounds.

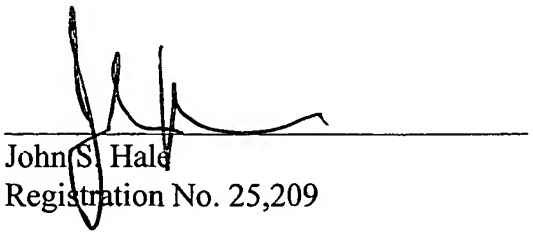
SUMMARY OF ARGUMENT

The respective grounds of final rejection of the claims of this application under 35 USC 102(a) and 103(a) are incorrect for the reasons advanced above and claims 1-22 should be allowed. Reversal thereof by the Honorable Board of Patent Appeals and Interferences is therefore requested and is earnestly solicited.

Our check in the amount of $250.00 is attached to cover the cost of filing this Brief. A Two Month Extension of Time is simultaneously filed with this Brief. Oral hearing will be requested during the rebuttal time period. If any additional fees are incurred, kindly charge the same to our Deposit Account No. 07-1340.

Respectfully submitted,

GIPPLE & HALE



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CLAIMS APPENDIX

Claim 1. A cleaning device comprising a shaped body made of porous polyvinyl acetal material having a uniform pore size throughout the material with over 90% of the pores ranging from about 7 microns to about 40 microns in size.

Claim 2. A cleaning device as claimed in claim 1 wherein said device is a roller having a smooth outer surface.

Claim 3. A cleaning device as claimed in claim 1 wherein said device is a pad.

Claim 4. A cleaning device as claimed in claim 1 wherein said device is a disk.

Claim 5. A cleaning device as claimed in claim 1 wherein said polyvinyl acetal material has an average pore size of about 20 microns.

Claim 6. A cleaning device as claimed in claim 1 wherein said material has about 95% of its pores with a size below 40 microns.

Claim 7. A cleaning device comprising a body made of porous polyvinyl acetal material, said polyvinyl acetal material having a bubble point pressure of about 0.92 PSI.

Claim 8. A cleaning device as claimed in claim 2 wherein said roller has an outside diameter of about 60mm and an inside diameter of about 30mm with a thickness of about 15mm.

Claim 9. A cleaning device as claimed in claim 1 wherein said material has a mean flow pore pressure of about 0.33 PSI.

Claim 10 A semiconductor cleaning device comprising a body made of porous polyvinyl acetal material with a cylindrical roller shape and a smooth outer surface, said material having uniform formed pore sizes throughout with at least 90% of the pores ranging from about 7 microns to about 40 microns in size with a fluid flow through rate which does not distort the

roller during the cleaning process when fluid is passed through it to clean the same.

Claim 11. A semiconductor cleaning device as claimed in claim 10 wherein said polyvinyl acetal material has an average pore size of about 20 microns.

Claim 12. A semiconductor cleaning device as claimed in claim 10 wherein said material has 95% of its pores with a size below 40 microns.

Claim 13. A semiconductor cleaning device comprising a body made of porous polyvinyl acetal material with formed pores and having at least 95% of its pores with a size under 40 microns.

Claim 14. A semiconductor cleaning device as claimed in claim 10 wherein said roller is substantially skinless.

Claim 15. A semiconductor cleaning device as claimed in claim 10 wherein said material has a mean flow pore pressure of about 0.33 PSI.

Claim 16. A semiconductor cleaning device comprising a body made of porous polyvinyl acetal material having a uniform pore size throughout the material with at least 95% of the pores being less than 40 microns in size, said material having a mean flow pore size of about 20 microns.

Claim 17. A semiconductor cleaning device as claimed in claim 16 wherein said material has a mean flow pressure of about 0.33PSI.

Claim 18. A semiconductor cleaning device comprising a substantially cylindrical roller body made of polyvinyl acetal with a smooth outer surface and uniform material porosity having a mean flow pore pressure of about 0.30 PSI with 90% of its pores ranging from 7 to 40 microns in size and wet flow rate using water as a medium ranging from about 7.0 L/min to 80.0

L/min, said pores forming substantially empty cavities.

Claim 19. A semiconductor cleaning device as claimed in claim 18 wherein cleaning solvent flow through said roller ranges from 120 - 180 ml/minute.

Claim 20. A semiconductor cleaning device comprising a substantially cylindrical roller body made of polyvinyl acetal with a smooth outer surface and uniform material porosity having a mean flow pore pressure of about 0.30 PSI with 90% of its pores ranging from 7 to 40 microns in size and a dry flow rate ranging from about 25.0 L/min to 95.0 L/min, said pores forming substantially empty cavities.

Claim 21. A semiconductor cleaning device as claimed in claim 18 wherein said roller body polyvinyl acetal material has less than 0.1 ppm formaldehyde.

Claim 22. A cleaning device as claimed in claim 1 wherein said device is a roller.

EVIDENCE APPENDIX

Affidavit of Thomas Drury.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	
DRURY, THOMAS J.	Examiner Chang
Serial Number: 09/838,138	Art Unit 1771
Filing Date: April 20, 2001	
For: POLYVINYL ACETAL COMPOSITION SKINLESS ROLLER BRUSH	

The Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

DECLARATION OF THOMAS J. DRURY

COMES NOW, Thomas J. Drury, who avers and swears that the following statements are true to the best of his belief and knowledge:

1. That I am the inventor of the Polyvinyl Acetal Composition Skinless Roller Brush as disclosed in U.S. Patent umber 09/838,138 and have been active in research and development in the polyvinyl acetal foam business for a number of years.

2. That I previously submitted a Declaration summarizing the text results obtained by Applied Materials Inc. on a roller brush product of the present invention which is identified as BPTOne 212XP material (3920-00307) and comparing the same with other rollers used in the marketplace including one developed by me.

3. That a copy of this test report is attached hereto as Exhibit A.

4. That on information and belief, Applied Materials Inc. makes approximately sixty percent (60%) of the world's semi-conductor production equipment.

5. That the inventive roller brushes of the present invention designated BPTOne were also

tested in the comparative testing by Motorola Inc. against Rippey brusnes. A copy of this test is attached hereto as Exhibit B.

6. That Rippey brushes are believed to be those disclosed by Bahten Patent No. 6,076,662 (assigned to Rippey Corporation). Rippey Corporation had previously distributed the Kanebo brush (See the Tomita Patent Number 4,566,919).

7. That another independent commentary on the present inventive roller brush by a respected non-affiliated individual consultant is attached hereto as Exhibit C.

8. That the consultant commentator is Hal Bailey, a semi-conductor industry expert who heads several silicon valley think tanks including BASYS Group and Phrason Dynamics.

9. That the present invention has been calculated by Mr. Bailey to result in a savings on one semi-conductor chip processor of Three Hundred Twenty Thousand Dollars ($320,000.00) per year.

10. That I am familiar with Ronald J. Cercone and Soloman Rosenblatt having worked with both parties for a number of years and am familiar with the products developed by both parties.

11. That roller brushes developed by Cercone and Rosenblatt are not known by me to have gained significant acceptance by the industry and are not believed to have significant, if any commercial usage in the silicon chip industry.

The undersigned declares that all facts and allegations contained in this declaration are true to the best of his knowledge; all statements made herein of his own knowledge are true and that all statements made on information an belief are believed to be true; and further, that these statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States code and that such willful false statements may jeopardize the validity of the

application or document or any registration resulting therefrom.

Respectfully submitted,

Date: October 30, 2003

Thomas J. Drury

EXHIBIT A

Summary

Objective:

- To evaluate, and compare, defect performance of four different brushes, under the same environment.

Tool used:

- 300MM Mirra Messa.

Results:

- BPTone 212XP material (3920-00307) had the best particle removal rate.

Experimental Details For Tool Qualification

Tools

- S3 300mm Mirra-Mesa
  - Megasonics
  - Brush 1
  - Brush 2
  - SRD
- Metrology
  - KLA-Tencor
  - Oxide BKM recipe

Methodology

- Cycle 100 dummy wafers through the system daily
- Testfire 4 oxide defect wafers
- Defect Qualification is < 30 adders (delta = post - pre) at 0.13 μm
- Cleaning Performance Metrics:
  - Delta = precount – postcount (typically used at customer site)
  - Map-to-map defect analysis not available

Experimental Details for Brush Type Evaluation

Methodology

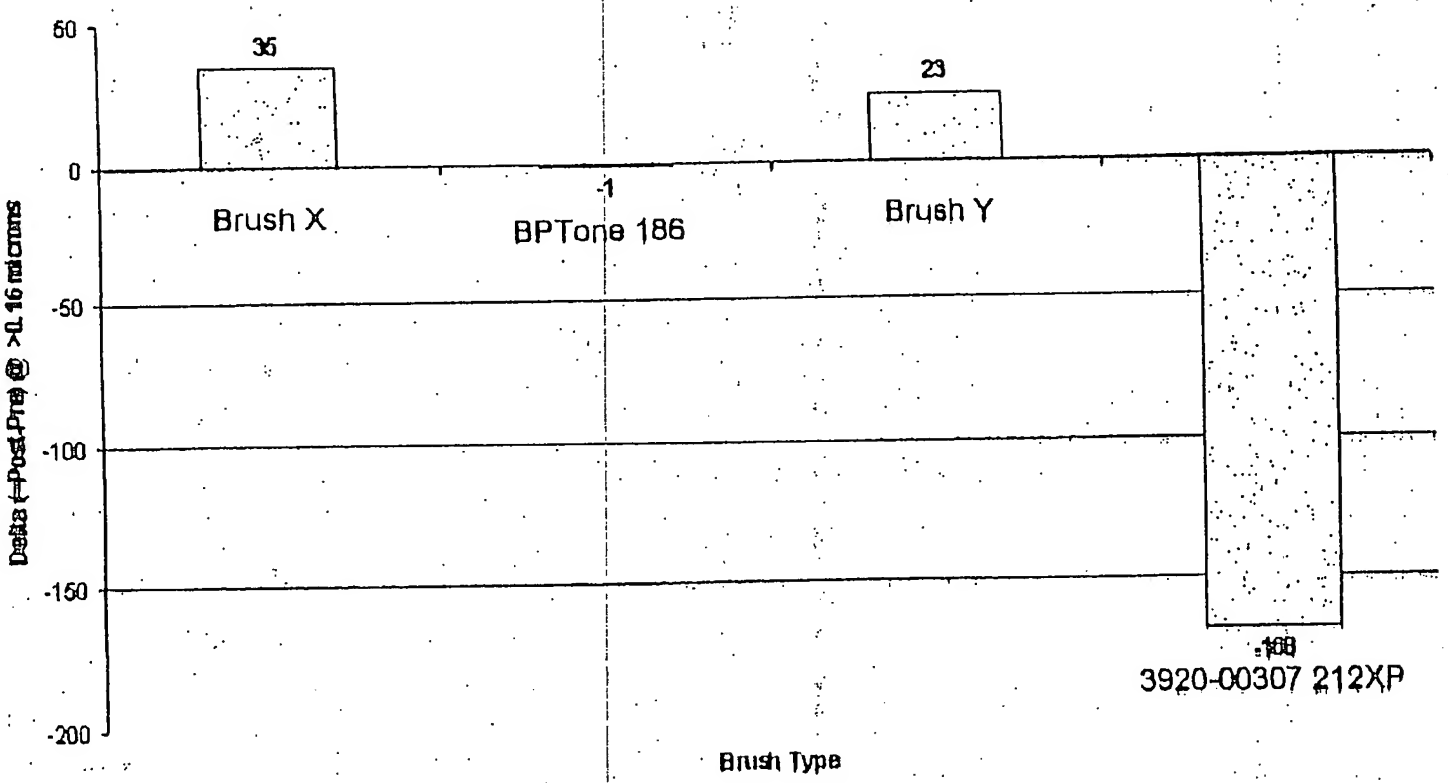
- Install Brushes and Run Brush Break-in twice
- Cycle 25 dummy wafers through system
- Testfire 4 oxide defect wafers for qualification
- Defect Qualification is < 30 adders (delta = post - pre) at 0.13 µm
- Testfire 5+ oxide defect wafers for Using BKM 1.1
- Cleaning Performance Metrics:
  - Delta = precount – postcount (typically used at customer site)
  - Map-to-map defect analysis not available

Objective

Evaluate Four Different Brushes for Brush Module 2

- Brush types
  - Brush X
  - Brush Y
  - BPT-1 Type 186
  - 3920-00307, BPT-1 Type 212

Effect of Different Brush Types



BPT-1 Type 212 Brushes Has Best Defect Performance

Applied Materials Confidential

EXHIBIT B

Final DI only cleaning test

Wafer	pre-count @ >.16	pre-count @ >.2	post-count @ >.16	post-count @ >.2
1	298	79	14	6
2	241	112	9	2
3	38	20	19	7
4	43	14	14	5
5	46	16	24	4
6	41	15	24	5
7	44	14	26	6
8	52	20	24	6
9	37	6	33	16
10	39	13	22	7
11	48	18	16	1
12	61	16	18	8
13	41	20	33	20
14	59	17	23	10
15	66	24	43	18

Average particles @ >.16 microns (pre)	Average particles @ > .20 microns (pre)	Average particles @ > .16 microns (post)	Average particles @ > .20 microns (post)
76.93	26.93	22.80	8.07

Average particle removal at > .16 microns	(54.13)
Average particle removal at > .20 microns	(18.87)

Wafers 1 and 2 were the main reason for high average particle removal rate. The results of the removal rate average are quite impressive. The BPT One Brushes show better cleaning performance then any other brush I have used. The removal rates generally average from adding 2 particles to removing 3 particles at .2 microns. By removing wafers no. 1 and 2, the removal rate at .16 was -22.77 and at .20 microns -7.89 average. This data shows that the BPT One brushes clean twice as good then Rippey brushes and their equivalent. Of special note in this test, wafer no. 9 was the only wafer to add particles. This is due because originally the wafer showed a scratch across the wafer on the Tencor. It turned out to be a solid line of particles. During post reading, almost all the particles were removed and the wafer no longer had a scratch count. This is the type of issue I mentioned above about smaller particles causing loss of Die.

AREA

Data thrown out due to bad wafers

	Pre BPT area	Post BPT area	Delta BPT area	Pre b area	Post b area	Delta b area	Pre c area	Post c area	Delta c area
1	30	9	-21	10	3	-7	9	9	0
2	12	7	-5	17	2	-15	14	9	-5
3	16	1	-15	6	2	-4	12	12	0
4	14	1	-13	7	4	-3	8	5	-3
5	3	1	-2	13	3	-10	11	7	-4
6	10	6	-4	14	7	-7	13	6	-7
7	10	1	-9	3	1	-2	10	6	-4
8	5	3	-2	11	3	-8	17	8	-9
9	3	0	-3	7	7	0	17	7	-10
10	6	3	-3				21	4	-17
11	9	4	-5				19	5	-14
12	19	16	-3				9	4	-5
13	7	3	-4				9	2	-7
14	10	8	-4				12	5	-7
15	12	5	-7	25	5	-20	41	12	-29
Totals:			-100			-76			-121

Total Defect

Data thrown out due to bad wafers

	Pre BPT Tot. Def.	Post BPT Tot. Def	Delta BPT Tot. Def	Pre b Tot. Def	Post b Tot. Def	Delta b Tot. Def	Pre c Tot. Def	Post c Tot. Def	Delta c Tot. Def
1	347	199	-148	223	78	-145	151	140	-11
2	158	88	-130	383	82	-301	355	131	-224
3	117	69	-48	78	39	-39	179	193	14
4	186	110	-76	125	61	-64	128	54	-74
5	123	74	-49	51	39	-12	170	151	-19
6	160	98	-62	175	56	-119	125	66	-59
7	242	72	-170	137	32	-105	288	95	-193
8	129	105	-24	91	54	-37	171	94	-77
9	162	44	-118	87	61	-26	300	77	-223
10	326	62	-264				297	67	-230
11	244	51	-193				407	82	-325
12	208	190	-18				69	85	16
13	204	74	-130				89	79	-10
14	93	120	27				59	104	45
15	111	75	-36	115	70	-45	163	70	-93
Totals:			-1439			-893			-1463

Scratch Defect

Data thrown out due to bad wafers

	Pre BPT SCR.	Post BPT SCR	Delta BPT SCR	Pre b SCR	Post b SCR	Delta b SCR	Pre c SCR	Post c SCR	Delta c SCR
1	12	10	-2	0	1	1	6	5	-1
2	5	7	-2	8	2	-6	8	3	-5
3	3	1	-2	6	1	-5	6	7	1
4	4	1	-3	5	2	-3	0	0	0
5	5	5	0	0	0	0	3	2	-1
6	2	0	-2	3	1	-2	3	0	-3
7	3	2	-1	2	2	0	5	3	-2
8	5	6	1	1	2	1	5	1	-4
9	1	0	-1	0	1	1	13	4	-9
10	10	5	-5				5	0	-5
11	4	1	-3				12	3	-9
12	7	2	-5				0	1	1
13	2	0	-2				2	1	-1
14	1	1	0				2	2	0
15	2	0	-2	0	0	0	5	2	-3
Totals:			-29			-13			-41

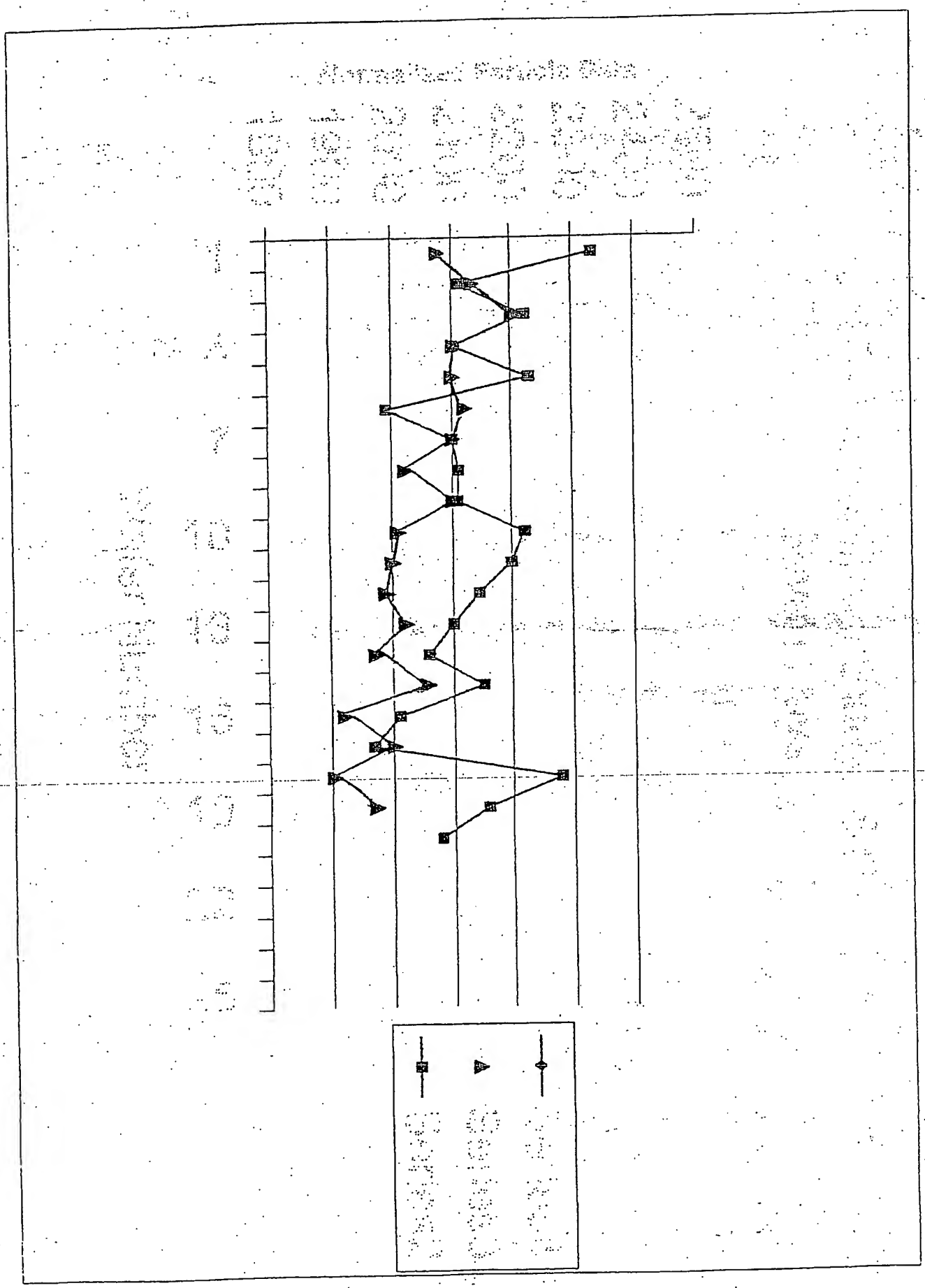


EXHIBIT C

Subj: Golden Gate Bridge for President
Date: Monday, October 27, 2003 6:34:47 PM
From: hal@silcon.com
To: td41ho@aol.com

Today, Tom, I had the opportunity to help AVS prepare for the Showcase Program in Portland Oregon. My contribution was to create the scope of information for the keynote address opening the conference and exhibits. The committee had two current users of BPT one Brushes, and the comment requested was "cost of ownership" development.

Why, these two separate users replaced Rippey brushes every 6-8 weeks or less, and with BPT one, they replace twice per year. They invited me to provide a Poster Display of my "next cost of ownership savings" based on the results achieved with the BPT one brushes of 40% savings in water and chemicals coupled to the long-term life of the brushes. Net savings on one processor is $320,000 per year including the cost of the brushes.

The Poster Board will feature all the technologies of Phrasor Dynamics:

1) Super Critical Vapor Phase FEOL reactive/removal processing
2) Thermadynamic Vapor Phase BEOL reactive/removal processing
3) Contact Reactive/Evacuation Post Processing in plating, coating and CMP
4) Electrohydrodynamic DRY-OUT

As part of the Poster Board, BASYS, on behalf of Phrasor Dynamics, has created one poster that reviews polyurethane, poly vinyl alcohol, poly vinyl ethylene, and hybrids including the Extenza formulations. Hydrofera is referenced for hybrid micropore PVA materials. The poster contains a chemical and performance compatability chart that importantly shows Hydrofera's reasons for +300,000 wafer processed by each set of your brushes. The facing poster board will have actual pictures and statistical results form +2 years of usage.

Smile, Tom, the message of performance worked! Only the message was never published or channeled to market! Maybe my courtesy of speaker's notes and poster board copy will help the cause! Try www.avs.org for time and place in Portland Oregon.

Celebrate!

Hal Bailey
Chairman
The Golden Gate Bridge for President Committee

RELATED PROCEEDINGS APPENDIX

There are no related proceedings to include in this appendix.